

CLAIMS

What is claimed is:

- 5 1. A method for transmit power control of transmitting wireless device, the method comprises:

transmitting, by the transmitting wireless device, a packet
to a targeted wireless device via a wireless channel at a

10 first power level;

determining, by the targeted wireless device, signal
strength of the packet received via the wireless channel to
produce a determined signal strength;

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determining, by the targeted wireless device, adequacy of
the first power level based on the determined signal
strength;

- 20 when the first power level is not adequate, determining, by
the targeted wireless device, a second power level for the
transmitting wireless device based on the determination of
the adequacy of the first power level; and

- 25 transmitting, by the targeted wireless device, a packet
indicating the second power level to the transmitting
wireless device via the wireless channel.

- 30 2. The method of claim 1, wherein the transmitting the
packet further comprises:

transmitting the packet to include an indicated power level of transmission by the transmitting wireless device.

3. The method of claim 2, wherein the determining the
5 signal strength, determining the adequacy of the first power level, and determining the second power level further comprise:

10 receiving a radio frequency signal modulated to carry the packet;

determining received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI;

15 converting the radio frequency signal into a baseband signal;

demodulating the baseband signal to recapture data;

20 computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

25 analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the
30 recaptured data are below corresponding minimum performance thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

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4. The method of claim 1, wherein the determining the signal strength, determining the adequacy of the first power level, and determining the second power level further comprise:

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transmitting, by the targeted wireless device, a request for identifying the first power level to the transmitting wireless device;

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receiving a radio frequency signal modulated to carry the packet;

determining received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI;

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converting the radio frequency signal into a baseband signal;

demodulating the baseband signal to recapture data;

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computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

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analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

5. The method of claim 1 further comprises:

providing, by the transmitting wireless device, an acknowledgement of receipt of the second power level to the targeted wireless device; and

providing, by the transmitting wireless device, an indication of power level adjustment from the first power level to the second power level to the targeted wireless device.

6. The method of claim 1 further comprises:

transmitting, by a station as the transmitting wireless device, the packet to an access point via a wireless channel at a first power level within an 802.11 wireless network;

determining, by the access point as the targeted wireless device, the signal strength of the packet, the adequacy of

the first power level, and the second power level when the first power level is not adequate.

7. The method of claim 1 further comprises:

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transmitting, by an access point as the transmitting wireless device, the packet to a station via a wireless channel at a first power level within an 802.11 wireless network;

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determining, by the station as the targeted wireless device, the signal strength of the packet, the adequacy of the first power level, and the second power level when the first power level is not adequate.

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8. A method for transmit power control of transmitting wireless device, the method comprises:

transmitting, by the transmitting wireless device, a packet
5 to a targeted wireless device via a wireless channel at a first power level;

determining, by the targeted wireless device, signal strength of the packet received via the wireless channel to
10 produce a determined signal strength;

transmitting, by the targeted wireless device, the determined signal strength of the packet to transmitting wireless device,
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determining, by the transmitting wireless device, adequacy of the first power level based on the determined signal strength;

20 when the first power level is not adequate, determining, by the transmitting wireless device, a second power level for the transmitting wireless device based on the determination of the adequacy of the first power level; and

25 adjusting, by the transmitting wireless device, transmit power from the first power level to the second power level when the first power level is not adequate.

9. The method of claim 8, wherein the determining the
30 signal strength, determining the adequacy of the first power level, and determining the second power level further comprise:

receiving, by the targeted wireless device, a radio frequency signal modulated to carry the packet;

- 5 determining, by the targeted wireless device, received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI;

- 10 converting, by the targeted wireless device, the radio frequency signal into a baseband signal;

demodulating, by the targeted wireless device, the baseband signal to recapture data;

- 15 computing, by the targeted wireless device, accuracy of the recaptured data;

- 20 separating, by the targeted wireless device, the recaptured data to isolate the indicated power level of transmission from data;

providing, by the targeted wireless device, the RSSI and the accuracy of the recaptured data to the transmitting wireless device;

- 25 analyzing, by the transmitting wireless device, the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

- 30 generating, by the transmitting wireless device, the second power level to be greater than the first power level when

the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

5 generating, by the transmitting wireless device, the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

10 10. The method of claim 8 further comprises:

providing, by the transmitting wireless device, an indication of power level adjustment from the first power level to the second power level to the targeted wireless device.

15 11. The method of claim 8 further comprises:

transmitting, by a station as the transmitting wireless device, the packet to an access point via a wireless
20 channel at a first power level within an 802.11 wireless network;

determining, by the access point as the targeted wireless device, the signal strength of the packet and the adequacy
25 of the first power level; and

determining, by the station, the second power level when the first power level is not adequate.

30 12. The method of claim 8 further comprises:

transmitting, by an access point as the transmitting wireless device, the packet to a station via a wireless channel at a first power level within an 802.11 wireless network;

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determining, by the station as the targeted wireless device, the signal strength of the packet and the adequacy of the first power level; and

10 determining, by the access point, the second power level when the first power level is not adequate.

transmitting, by an access point as the transmitting wireless device, the packet to a station via a wireless channel at a first power level within an 802.11 wireless network;

13. A wireless communication network that includes a plurality of basic service sets, wherein each of the plurality of basic service sets comprises:

5 access point (AP); and

plurality of stations, wherein the access point includes an AP processing module and AP memory, wherein the AP memory includes operational instructions that cause the AP

10 processing module to:

receive a packet from one of the plurality of stations a wireless channel at a first power level;

15 determine signal strength of the packet received via the wireless channel to produce a determined signal strength;

20 determine adequacy of the first power level based on the determined signal strength;

25 determine a second power level for the one of the plurality of stations based on the determination of the adequacy of the first power level when the first power level is not adequate; and

30 transmit a packet indicating the second power level to the one of the plurality of stations via the wireless channel; and

wherein each of the plurality of stations (STA) includes a STA processing module and STA memory, wherein the STA

memory includes operational instructions that cause the STA processing module to:

5 transmit the packet to the access point via the
wireless channel at the first power level;

provide an acknowledgement of receipt of the second power level to the access point; and

10 provide an indication of power level adjustment from
the first power level to the second power level to the
access point.

14. The wireless communication network of claim 13,
15 wherein the STA memory further comprises operational
instructions that cause the one of the plurality of
stations to transmit the packet by:

20 transmitting the packet to include an indicated power level
of transmission to identify the first power level.

15. The wireless communication network of claim 14,
wherein the access point further comprises:

25 radio receiver operably coupled to receive a radio
frequency signal modulated to carry the packet, wherein the
radio receiver determines received signal strength
indicator (RSSI) of the radio frequency signal to produce
an RSSI, converts the radio frequency signal into a
30 baseband signal, and demodulates the baseband signal to
recapture data;

wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

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computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

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analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

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generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

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generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

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16. The wireless communication network of claim 13, wherein the access point further comprises:

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radio transmitter operably coupled to transmit a request for identifying the first power level to the one of the plurality of stations;

radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet and the

indication of the first power level, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

17. The wireless communication network of claim 13, wherein the STA memory further comprises operational

instructions that cause the STA processing module of the one of the plurality of stations to:

5 receive a second packet from the access point via the wireless channel at a third power level;

determine signal strength of the second packet received via the wireless channel to produce a second determined signal strength;

10 determine adequacy of the third power level based on the second determined signal strength;

15 determine a fourth power level for the access point based on the determination of the adequacy of the third power level when the third power level is not adequate; and

20 transmit a packet indicating the fourth power level to the access point via the wireless channel; and

wherein AP memory further includes operational instructions that cause the AP processing module to:

25 transmit the second packet to the one of the plurality of stations via the wireless channel at the third power level;

30 provide an acknowledgement of receipt of the fourth power level to the one of the plurality of stations; and

provide an indication of power level adjustment from the third power level to the fourth power level to the one of the plurality of stations.

5 18. The wireless communication network of claim 17, wherein the AP memory further comprises operational instructions that cause the AP processing module to transmit the packet by:

10 transmitting the second packet to include an indicated power level of transmission to indicate the third power level.

15 19. The wireless communication network of claim 14, wherein the one of the plurality of stations further comprises:

20 radio receiver operably coupled to receive a second radio frequency signal modulated to carry the second packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the second radio frequency signal to produce second RSSI, converts the second radio frequency signal into a second baseband signal, and demodulates the second baseband signal to recapture second data;

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wherein the STA memory further includes operational instructions that cause the one of the plurality of stations to determine the adequacy of the third power level and determine the fourth power level by:

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computing accuracy of the recaptured second data;

separating the recaptured second data to isolate the indicated power level of transmission from data;

- 5 analyzing the second RSSI and the accuracy of the recaptured second data to produce the adequacy of the third power level;

- 10 generating the fourth power level to be greater than the third power level when the second RSSI or the accuracy of the recaptured second data are below corresponding minimum performance thresholds; and

- 15 generating the fourth power level to be less than the third power level when the second RSSI and the accuracy of the recaptured second data are above acceptable performance thresholds.

20. The wireless communication network of claim 17,
20 wherein the one of the plurality of stations further comprises:

- 25 radio transmitter operably coupled to transmit a request for identifying the third power level to the access point;

- radio receiver operably coupled to receive a second radio frequency signal modulated to carry the second packet and the indication of the third power level, wherein the radio receiver determines received signal strength indicator
30 (RSSI) of the radio frequency signal to produce second RSSI, converts the second radio frequency signal into a

second baseband signal, and demodulates the second baseband signal to recapture second data;

5 wherein the STA memory further includes operational instructions that cause the one of the plurality of stations to determine the adequacy of the third power level and determine the fourth power level by:

computing accuracy of the recaptured second data;

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separating the recaptured second data to isolate the indicated power level of transmission from data;

15

analyzing the second RSSI and the accuracy of the recaptured second data to produce the adequacy of the third power level;

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generating the fourth power level to be greater than the third power level when the second RSSI or the accuracy of the recaptured second data are below corresponding minimum performance thresholds; and

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generating the fourth power level to be less than the third power level when the second RSSI and the accuracy of the recaptured second data are above acceptable performance thresholds.

21. A wireless communication network that includes a plurality of basic service sets, wherein each of the plurality of basic service sets comprises:

5 access point (AP); and

plurality of stations, wherein the access point includes an AP processing module and AP memory, wherein the AP memory includes operational instructions that cause the AP
10 processing module to:

receive a packet from one of the plurality of stations via a wireless channel at a first power level;

15 determine signal strength of the packet received via the wireless channel to produce a determined signal strength;

20 transmit the determined signal strength of the packet to the one of the plurality of stations;

wherein each of the plurality of stations (STA) includes a STA processing module and STA memory, wherein the STA memory includes operational instructions that cause the STA
25 processing module to:

transmit the packet to the access point via a wireless channel at the first power level;

30 determine adequacy of the first power level based on the determined signal strength;

determine a second power level based on the determination of the adequacy of the first power level when the first power level is not adequate; and

- 5 adjust transmit power from the first power level to the second power level when the first power level is not adequate.

22. The wireless communication network of claim 21,
10 wherein the access point further comprises:

radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength
15 indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

- 20 wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level by:

- 25 computing accuracy of the recaptured data;
providing the RSSI and the accuracy of the recaptured data to the transmitting wireless device;

- wherein the STA memory further includes operational
30 instructions that cause the STA processor to determine the adequacy of the first power level and to determine the second power level by:

analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

5 generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

10 generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

15 23. The wireless communication network of claim 21, wherein the STA memory further comprises operational instructions that cause the STA processing module to:

20 provide an indication of power level adjustment from the first power level to the second power level to the access point.

24. A station for use in a wireless communication network, the station (STA) comprises:

a STA processing module; and

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STA memory operably coupled to the STA processing module, wherein the STA memory includes operational instructions that cause the STA processing module to:

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transmit a packet to an access point of the wireless communication network via a wireless channel at a first power level;

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provide an acknowledgement of receipt of a second power level to the access point; and

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provide an indication of power level adjustment from the first power level to the second power level to the access point.

25. The station of claim 24, wherein the STA memory further comprises operational instructions that cause the STA processing module to transmit the packet by:

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transmitting the packet to include an indicated power level of transmission to identify the first power level.

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26. The station of claim 24, wherein the STA memory further comprises operational instructions that cause the STA processing module to:

receive a second packet from the access point via the wireless channel at a third power level;

5 determine signal strength of the second packet received via the wireless channel to produce a second determined signal strength;

10 determine adequacy of the third power level based on the second determined signal strength;

15 determine a fourth power level for the access point based on the determination of the adequacy of the third power level when the third power level is not adequate; and

20 transmit a packet indicating the fourth power level to the access point via the wireless channel.

27. The station of claim 26 further comprises:

25 radio receiver operably coupled to receive a second radio frequency signal modulated to carry the second packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the second radio frequency signal to produce second RSSI, converts the second radio frequency signal into a second baseband signal, and demodulates the second baseband signal to recapture second data;

30 wherein the STA memory further includes operational instructions that cause the STA processing module to

determine the adequacy of the third power level and
determine the fourth power level by:

computing accuracy of the recaptured second data;

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separating the recaptured second data to isolate the
indicated power level of transmission from data;

analyzing the second RSSI and the accuracy of the

10 recaptured second data to produce the adequacy of the third
power level;

generating the fourth power level to be greater than the
third power level when the second RSSI or the accuracy of
15 the recaptured second data are below corresponding minimum
performance thresholds; and

generating the fourth power level to be less than the third
power level when the second RSSI and the accuracy of the
20 recaptured second data are above acceptable performance
thresholds.

28. The station of claim 27 further comprises:

25 radio transmitter operably coupled to transmit a request
for identifying the third power level to the access point
and to transmit the packet.

29. An access point for use in a wireless communication network, the access point (AP) comprises:

an AP processing module; and

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AP memory operably coupled to the AP processing module, wherein the AP memory includes operational instructions that cause the AP processing module to:

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receive a packet from one of a plurality of stations of the wireless communication network via a wireless channel at a first power level;

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determine signal strength of the packet received via the wireless channel to produce a determined signal strength;

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determine adequacy of the first power level based on the determined signal strength;

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determine a second power level for the one of the plurality of stations based on the determination of the adequacy of the first power level when the first power level is not adequate; and

transmit a packet indicating the second power level to the one of the plurality of stations via the wireless channel.

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30. The access point of claim 29 further comprises:

radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce
5 an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

wherein the AP memory further includes operational
10 instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

computing accuracy of the recaptured data;

15 separating the recaptured data to isolate the indicated power level of transmission from data;

analyzing the RSSI and the accuracy of the recaptured data
20 to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance
25 thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance
30 thresholds.

31. The access point of claim 29 point further comprises:

radio transmitter operably coupled to transmit a request for identifying the first power level to the one of the plurality of stations;

5

radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet and the indication of the first power level, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

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wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

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computing accuracy of the recaptured data;

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separating the recaptured data to isolate the indicated power level of transmission from data;

analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

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generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

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generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

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32. The access point of claim 29, wherein the AP memory further comprises operational instructions that cause the AP processing module to:

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transmit a second packet to the one of the plurality of stations via the wireless channel at the third power level;

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provide an acknowledgement of receipt of the fourth power level to the one of the plurality of stations; and

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provide an indication of power level adjustment from the third power level to the fourth power level to the one of the plurality of stations.

33. A station for use in a wireless communication network,
the station (STA) comprises:

a STA processing module; and

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STA memory operably coupled to the STA processing module,
wherein the STA memory includes operational instructions
that cause the STA processing module to:

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transmit a packet to an access point of the wireless
communication network via a wireless channel at the
first power level;

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determine adequacy of the first power level based on a
determined signal strength received from the access
point;

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determine a second power level based on the
determination of the adequacy of the first power level
when the first power level is not adequate; and

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adjust transmit power from the first power level to
the second power level when the first power level is
not adequate.

34. The station of claim 33, wherein the STA memory
further comprises operational instructions that cause the
STA processor to determine the adequacy of the first power
level and to determine the second power level by:

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receiving received signal strength indicator (RSSI)
and accuracy of the recaptured data from the access
point;

5 analyzing RSSI and the accuracy of the recaptured data
to produce the adequacy of the first power level;

generating the second power level to be greater than
the first power level when the RSSI or accuracy of the
10 recaptured data are below corresponding minimum
performance thresholds; and

generating the second power level to be less than the
first power level when the RSSI and the accuracy of
15 the recaptured data are above acceptable performance
thresholds.

35. The station of claim 33, wherein the STA memory
further comprises operational instructions that cause the
20 STA processing module to:

provide an indication of power level adjustment from the
first power level to the second power level to the access
point.

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36. An access point for use in a wireless communication network, the access point (AP) comprises:

an AP processing module; and

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AP memory operably coupled to the AP processing module, wherein the AP memory includes operational instructions that cause the AP processing module to:

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receive a packet from one of a plurality of stations of the wireless communication network via a wireless channel at a first power level;

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determine signal strength of the packet received via the wireless channel to produce a determined signal strength; and

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transmit the determined signal strength of the packet to the one of the plurality of stations.

37. The access point of claim 36 further comprises:

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radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

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[illegible]

- 5 computing accuracy of the recaptured data; and
- providing the RSSI and the accuracy of the recaptured data to the transmitting wireless device.